

Name: _____

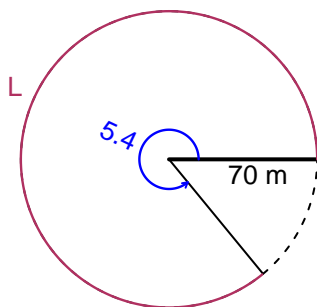
Date: _____

Trig Final (TEST v671)

- You can use a calculator (like [Desmos](#))
- You should have a unit-circle with special angles and coordinates marked.

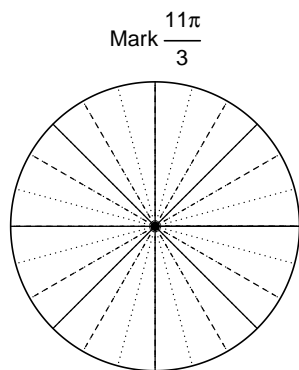
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 5.4 radians. The radius is 70 meters. How long is the arc in meters?

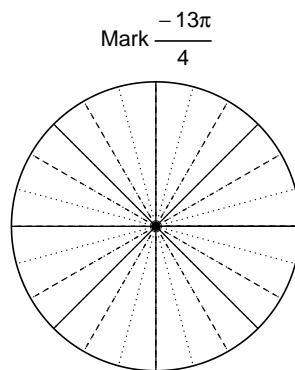


Question 2

Consider angles $\frac{11\pi}{3}$ and $-\frac{13\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{11\pi}{3}\right)$ and $\sin\left(-\frac{13\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\cos(11\pi/3)$



Find $\sin(-13\pi/4)$

Question 3

If $\cos(\theta) = \frac{36}{85}$, and θ is in quadrant IV, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -7.16$ meters, a frequency of 4.16 Hz, and an amplitude of 6.12 meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).